10. The method of claim 6 wherein the multivalent ligand inhibits chemotaxis of the prokaryotic cell.

17. The method of claim 2 wherein the cell is a eukaryotic cell.

21. The method of claim 17 wherein the eukaryotic cell is a cell of the immune system.

25. The method of claim 24 wherein one or more of the signal recognition elements is a formylated peptide and wherein the multivalent ligand comprises a plurality of formylated peptides covalently bonded to a molecular scaffold.

31. The method of claim 30 wherein the multivalent ligand comprises a signal recognition element that is an epitope foreign to the organism from which the B-cell or T-cell originates.

38. The method of claim 30 wherein the multivalent ligand comprises at least one signal recognition element that is a self epitope which is recognized as a foreign epitope by the B-cell or T-cell.

45. The method of claim 44 wherein the multivalent ligand modifies the immune response to the foreign antigen or epitope and wherein the multivalent ligand comprises a signal recognition element that is an epitope or antigen that is recognized as foreign by the immune cell, cells or immune system that mediates the immune response.

47. The method of claim 46 wherein the multivalent ligand modifies the immune response to an antigen or epitope that is recognized as self and wherein the multivalent ligand comprises a signal recognition element that is an epitope or antigen that is recognized as self by the immune cell, cells or immune system.

52. A pharmaceutical composition for treating a bacterial infection which comprises an

amount of a multivalent ligand effective for inhibiting the chemotaxis response in the bacterium, wherein the multivalent ligand comprises a plurality of signal recognition elements that are chemoattractant signals covalently bonded to a molecular scaffold, and a pharmaceutically acceptable carrier.

60. The method of claim 59 wherein one or more of the recognition elements binds to a protein.

61. The method of claim 59 wherein one or more of the functional elements is a label or a reporter group.

62. The method of claim 1 wherein one or more or the signal recognition elements is selected from the group consisting of an amino acid, a peptide, a protein, a derivatized peptide, a monosaccharide, a disaccharide, a polysaccharide, a nucleic acid, a cell nutrient, an epitope, an antigenic determinant, a hapten, or a cell surface receptor.

63. The method of claim 1 wherein one or more of the signal recognition elements is a saccharide or a derivatized saccharide.

64. The method of claim 1 wherein one or more of the signal recognition elements is a peptide or a derivatized peptide.

65. The method of claim 1 wherein one or more of the signal recognition elements is a protein.

66. The method of claim 1 wherein one or more of the signal recognition elements is an N-formyl peptide.

67. The method of claim 1 wherein one or more of the signal recognition elements is an

epitope.

69. The method of claim 1 wherein the multivalent ligand comprises 2 to about 10 signal recognition elements.

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70. The method of claim 1 wherein the multivalent ligand comprises about 10 to 25 signal recognition elements .

76. The method of claim 75 wherein the multivalent ligand further comprises a plurality of recognition elements covalently bonded to the scaffold wherein the signal recognition elements are in turn noncovalently bonded to one or more recognition elements.

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79. The method of claim 78 wherein the lectins are Concanavalin A.

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80. The method of claim 1 wherein the molecular scaffold is selected from the group consisting of a polyacrylamide, a polyester, a polyether, a polymethacrylate, a polyol, and a polyamino acid.

82. The method of claim 1 wherein the multivalent ligand has the structure:

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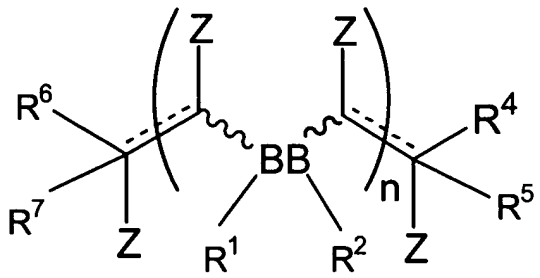


wherein:

n is an integer that is 2 or more which represents the number of repeating units within the parentheses in the ligand;

the dashed lines indicate optional double bonds;

"BB" represents the backbone repeating unit, which may be cyclic or acyclic, and may be the same or different in a random or block arrangement, the wavy lines indicating that a BB unit may be in either a cis or trans configuration in the ligand backbone;

each R^1 and R^2, independently of other R^1 and R^2 in the ligand, can be H or an organic group, a recognition element -L^2-RE, a functional element -L^3-FE or a signal recognition element -L^1-SRE or both of R^1 and R^2 can be the -L^1-SRE group;

wherein L^{1-3}, independently, represent optional linker groups which may be the same or different in different repeating units;

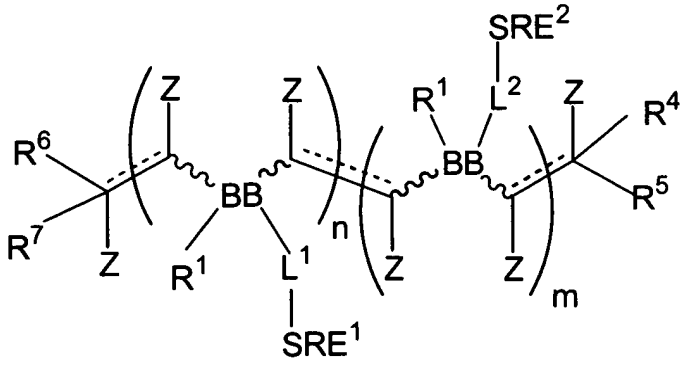
R^4 and R^5 are H, or an organic group;

R^6 and R^7 are H, an organic group or an end-group; and

Z , independently of other Z in the ligand, is H, OH, OR^8, SH, a halide (F, Br, Cl, I), NH_2 or $N(R^8)_2$, where R^8 is H or an organic group or Z is absent when the optional double bond is present.

83. The method of claim 82 wherein SRE is a peptide or a derivatized peptide.

91. The method of claim 82 wherein the multivalent ligand has the structure:



wherein:

m + n is 2 or more;

dashed lines indicate the presence of optional double bonds;

"BB" represents the backbone repeating unit, which may be cyclic or acyclic, and may be

the same or different in a random or block arrangement and wavy lines indicate that the BB unit may be in a cis or trans configuration in the backbone of the repeating unit;

each R^1, independent of other R^1 in the ligand, can be H or an organic group;

L^1 and L^2, which may be the same or different, represent optional linker groups;

SRE^1 and SRE^2 represent two different signal groups;

R^4 and R^5 are H, an organic group or an end-group;

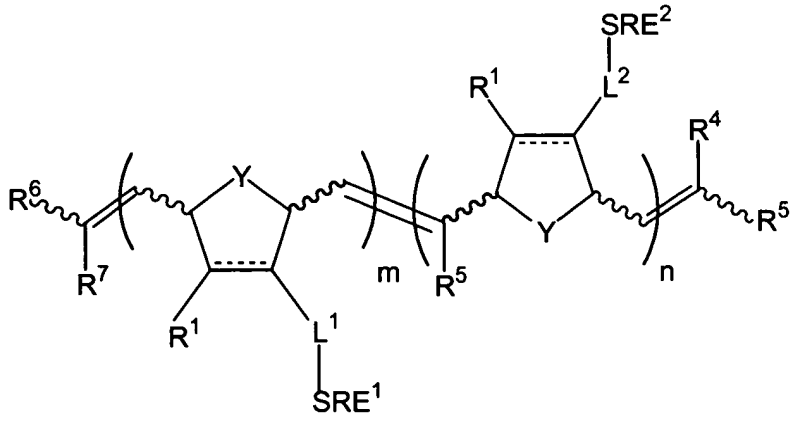
R^6 and R^7 are H, an organic group or an end-group; and

Z , independently of other Z in the polymer, is H, OH, OR^8, SH, a halide (F, Br, Cl, I), NH_2 or $N(R^8)_2$ where R^8 is H or an organic group or Z is absent when a double bond is present.

95. The method of claim 91 wherein one of SRE^1 or SRE^2 is an epitope and the other of SRE^1 or SRE^2 binds to a cell surface receptor of an immune cell.

100. The multivalent ligand of claim 99 wherein the FE in the at least one -L^2-FE group in the ligand is a detectible label or a reported group.

107. The multivalent ligand of claim 96 having the structure:



wherein:

m + n is an integer of 2 or more and each integer represents the number of repeating units in the parentheses;

each Y, independent of other Y in the ligand, is -O-, -S-, $-NR^8-$, or $-CH_2-$;

R^1 can be H, an organic group, a $-L^2$-RE group or an $-L^3$-FE group;

L^1 and L^2, which may be the same or different, represent optional linker groups;

SRE^1 and SRE^2 represent two different signal recognition elements;

R^4 and R^5 are H, an organic group or an end-group; and

R^6 and R^7 are H, an organic group or an end-group.

110. The multivalent ligand of claim 107 wherein one of SRE^1 or SRE^2 is an epitope and the other of SRE^1 or SRE^2 binds to an immune cell.

124. The method of claim 122 wherein the biological particles are cells, viruses or virions.

126. A method for inducing or enhancing induction of apoptosis in a cell which comprises the steps of:

forming a multivalent ligand which comprises a plurality of signal recognition elements which bind to the cell and induce apoptosis in the cell and contacting the cell with the multivalent ligand.

127. The method of claim 126 wherein one or more of the signal recognition elements is a lectin.

Please add new claims 132-141:

--132. The method of claim 122 wherein the multivalent ligand is bonded to a solid support.

133. A method for generating an assembly of biological macromolecules or particles which comprises the steps of:

(a) providing a multivalent ligand which comprises a molecular scaffold to which a plurality of recognition elements which, in turn, bind to one or more biological macromolecules or biological particles wherein the number, density and spacing of recognition elements bonded to the molecular scaffold are controlled.

(b) contacting the multivalent ligand with biological macromolecules or particles such that the recognition elements of the ligand bind to two or more biological macromolecules or biological particles.

134. The method of claim 133 wherein the biological macromolecules are peptides.

135. The method of claim 133 wherein the biological particles are cells, viruses or virions.

136. The method of claim 133 wherein the multivalent ligand further comprises one or more FE bonded to the molecular scaffold.

137. The method of claim 133 wherein the FE is a detectable label.

138. The method of claim 133 wherein the FE is a group that can be attached to a solid support.

139. The method of claim 133 wherein the molecular scaffold is a polymer.

140. The method of claim 1 wherein the multivalent ligand is bonded to a solid support.

141. The method of claim 82 wherein the multivalent ligand is bonded to a solid support.--

In the Abstract

Please replace the Abstract with the following: